

What is claimed is:

[Claim 1] 1. A method of fabricating a resistor on a semiconductor substrate comprising the steps of:

providing at least one resistor having a resistance value on a surface of a semiconductor substrate, said at least one resistor having been subjected to a silicidation process;
measuring the resistance of the at least one resistor to determine actual resistance of the resistor after silicidation; and

adjusting the resistance of the resistor to achieve a desired resistance value.

[Claim 2] 2. The method of Claim 1 wherein said measuring is performed by a four point probe measurement.

[Claim 3] 3. The method of Claim 1 wherein said adjusting comprising a rapid thermal anneal step.

[Claim 4] 4. The method of Claim 3 wherein said rapid thermal anneal step is performed at a temperature from about 500° to about 800°C for a time period from about 1 to about 120 seconds.

[Claim 5] 5. The method of Claim 4 wherein said rapid thermal anneal step is performed at a temperature from about 650° to about 750°C for a time period from about 30 to about 60 seconds.

[Claim 6] 6. The method of Claim 3 wherein said rapid thermal anneal is performed in an inert or forming gas ambient.

[Claim 7] 7. The method of Claim 1 wherein said adjusting comprises ion implantation and a low temperature rapid thermal anneal step.

[Claim 8] 8. The method of Claim 7 wherein said ion implantation comprises implanting at least one ion of boron (B), indium (In), phosphorus (P), arsenic (As) or antimony (Sb).

[Claim 9] 9. The method of Claim 8 wherein said at least one ion comprises B or As.

[Claim 10] 10. The method of Claim 7 wherein said low temperature rapid thermal annealing step is performed at a temperature of about 800°C or less for a time period from about 1 to about 120 seconds.

[Claim 11] 11. The method of Claim 7 wherein said low temperature rapid thermal annealing step is performed at a temperature from about 600° to about 750°C for a time period from about 30 to about 60 seconds.

[Claim 12] 12. The method of Claim 7 wherein said low temperature rapid thermal anneal step is performed in an inert or forming gas ambient.

[Claim 13] 13. The method of Claim 1 wherein said adjusting comprises a combination of a rapid thermal anneal step and a step including ion implantation and a low temperature rapid thermal anneal.

[Claim 14] 14. The method of Claim 1 wherein said resistor includes a doped Si-containing layer.

[Claim 15] 15. The method of Claim 14 wherein said doped Si-containing layer comprises polysilicon or polySiGe.

[Claim 16] 16. The method of Claim 1 further comprising repeating said steps of measuring and adjusting at least once.

[Claim 17] 17. The method of Claim 1 wherein said silicidation process comprises at least a one step anneal.

[Claim 18] 18. The method of Claim 17 further comprising etching and a second annealing step.

[Claim 19] 19. A method of fabricating a resistor on a semiconductor substrate comprising the steps of:

providing at least one polySi resistor having a resistance value on a surface of a semiconductor substrate, said at least one polySi resistor having been subjected to a silicidation process;

measuring the resistance of the at least one polySi resistor to determine actual resistance of the resistor after silicidation; and

adjusting the resistance of the resistor to achieve a desired resistance value, said adjusting comprises a rapid thermal anneal step or ion implantation and a low temperature rapid thermal anneal step.

[Claim 20] 20. The method of Claim 19 wherein said measuring and said adjusting steps are repeated at least once.